

transistor checker



MODEL TS 9001

- PLUG IN ANY TRANSISTOR
- SET SWITCHES
- READ DIRECTLY

β , I_{CO} , β_{INV} , I_{EO}

ALL IMPORTANT DC PARAMETERS

See Reverse Side for Specifications and Prices

DESCRIPTION:

REO's Transistor Checker Model 9001 is the finest instrument of its kind. It checks all important transistor DC parameters, including those in the inverted connection. A remote connector permits checking of parameters while a transistor is in an environmental chamber. The meter's 50 microampere movement enhances the capability to read I_{CO} and I_{EO} . Because the Beta of many transistors exceeds 100, a Beta-Times-Ten scale has been provided permitting accurate indication of Betas up to 1000. A transistor socket accommodates all common transistor case and base configurations. Transistors of unusual case or base styles are easily tested by using the remote connector. A diode test capability is also provided for testing inverse leakage current as well as the forward DC resistance. The instrument is powered by a mercury cell battery assuring long life at constant voltage. A battery test position is provided to ascertain the condition of the battery at any time.

The remote connector provides unlimited flexibility to the instrument. For example, small signal Beta may be achieved by external insertion of additional base resistance. This resistance may be adjusted to provide any base current the user desires, thus providing Beta measurements for any value of base current from 0 to 100 microamperes. In the inverted connection the applied voltage is dropped to 1 volt. This feature accommodates a maximum tolerable inverse voltage as low as one volt, permitting inverted parameter reading of many transistors that otherwise could not be checked. If the instrument is used correctly, no damage will result to any transistor.

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SPECIFICATIONS

MODEL TS 9001

- Accuracy: $\pm 3\%$ on all scales except an inverted Beta and Beta X 10 scale which is 5%. A three-foot cable with insulation to $+200^{\circ}\text{F}$ is supplied with each instrument.
- Forward Connection:
 1. DC Beta at 100 microamps base current.
 2. Ico in microamps.
 3. DC Beta X 10 at 100 microamps base current.
- Inverted Connection:
 1. Beta inverted at 100 microamps base current and 1 volt between emitter and collector.
 2. Ico in microamps with 1 volt applied
- Remote Connection
 1. All readings taken from the remote connection are the same as those taken on the meter.
- Overall Dimensions: $5\frac{5}{8}$ " wide x $6\frac{7}{8}$ " long x 3" high.

Special production assemblies will be quoted on request. All REO standard products may be modified to meet specific customer requirements. Proposals and quotations will be submitted on request.

Specifications and prices are subject to change without notice.



Reo division

P.O. BOX 415
GARDEN GROVE, CALIFORNIA 92642
Tel. (714) 537-4534 - TWX (714) 530-0313



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meter protector



MODEL MP 9000

- IMMEDIATE OVERLOAD PROTECTION
- AUTOMATIC RECOVERY

**WILL KEEP DEGRADATION AND
CURRENT OVERLOAD RATIOS CONSTANT**

NOT A FUSE

SPECIFICATIONS:

Meter Accuracy: Degradation less than 0.6 percent for meter movements up to 200 millivolts with 2000 ohms or more DC resistance.

OVERLOAD PROTECTION:

Meter Movement:	Overload Current Ratio:
25 μ a	12,000: 1
50 μ a	6,000: 1
100 μ a	3,000: 1
200 μ a	1,500: 1
1000 μ a	300: 1

NOTE: The above degradation and current overload ratios can be maintained, upon request, for any D'Arsonval meter movement up to 200 millivolts with DC resistance as low as 200 ohms.
Quantity prices will be quoted.

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REO'S Meter Protector will protect any D'Arsonval meter movement between zero and one milliamperes. There is virtually no degradation in the basic meter accuracy resulting from the Protector. Unlike a fuse, the Protector provides instantaneous overload protection and when the overload is removed the Protector automatically recovers rendering the meter operable. Although the Protector allows a minimum overload to be applied to the meter most D'Arsonval movements are rated for overloads of 5 to 1 and this Protector keeps the overload within these limits.

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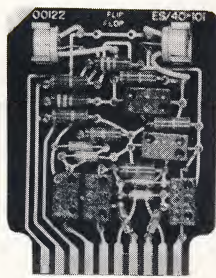
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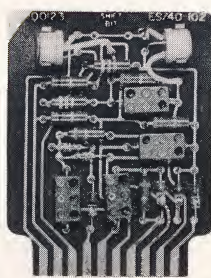
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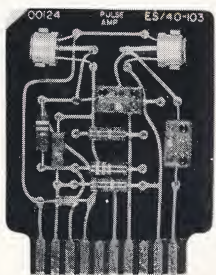
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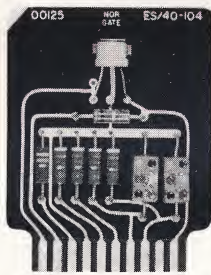
FLIP-FLOP



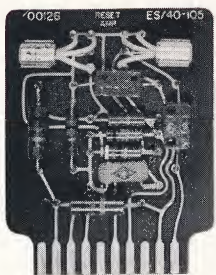
SHIFT BIT



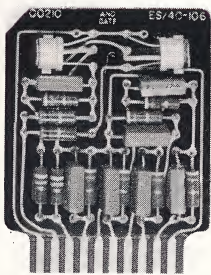
PULSE AMP.



NOR GATE



RESET AMP.



AND GATE

computer circuit modules

1 MEGACYCLE SERIES

SPECIFICATIONS

- Rated Operating Frequency Range: 0-1 mc (binary mode) (And Gate, Flip-Flop and Nor Gate available in 10 mc)
- Operating Temperature Range: -55° to +65° C
- Power Requirements: -10.0 volts/10 ma; +6 volts/.2 ma
- Size: 2 1/4" x 2 7/8"
- Maximum reliability is achieved by utilizing 100% redundancy of the circuitry.

See reverse side for specifications

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FLIP-FLOP			
Model ES/40-101	Input	Output	Set and Reset
Amplitude (volts)	$\geq +6$	$\geq 7.5 $ pos. or neg. going	$\geq +2$
Rise Rate (volts/sec)	$\geq 6 \times 10^7$	$\geq 6 \times 10^7$	
Decay Rate (volts/sec)		$\geq 1.5 \times 10^6$	$\geq 2.5 \times 10^8$
Pulse Width (50% amplitude) (μ sec)	≥ 0.5		≥ 0.45
Current (ma)		≥ 8 at 25°C. ≥ 3 at 65°C.	

Separate feedback input is provided to permit independent reset for specialized counting.

COUNT BIT	Inputs		Output
	Shift Pulses	Read-in & Reset	
Model ES/40-102			
Amplitude (volts)	$\geq +6.6$	$\geq +2$	$\geq 7.5 $ pos. or neg. going
Rise Rate (volts/sec)	$\geq 6 \times 10^7$	$\geq 2.5 \times 10^8$	$\geq 6 \times 10^7$
Pulse Width (50% amplitude) (μ sec)	≥ 0.5	≥ 0.45	
Current (ma)	2		≥ 8 ma at 25°C. ≥ 3 ma at 65°C.
Delay after control pulse (μ sec)	≥ 1		

PULSE AMPLIFIER			
Model ES/40-103	Input	Output 1	Output 2
Amplitude (volts)	$\geq +7$	$\geq -9 $ (at no load)	$\geq +9$ (at no load)
Rise Rate (volts/sec)	$\geq 8 \times 10^6$	$\geq 4 \times 10^7$	$\geq 2.5 \times 10^8$
Decay Rate (volts/sec)			$\geq 5.0 \times 10^7$
Pulse Width (50% amplitude) (μ sec)			≥ 0.4
Current (ma)	1.25	9 max.	14 max.

NOR GATE			
Model ES/40-104	Input 1	Input 2	Output
Amplitude (volts)	$\geq -5 $	$\geq -5 $	$\geq 9 $ pos. or neg. going
Pulse Width (50% amplitude) (μ sec)	≥ 0.5	≥ 3.0	
Current (ma)	1.0	1.0	7.0 ma max.
Rise Rate (volts/sec)			7×10^7

RESET AMPLIFIER		
Model ES/40-105	Input	Output
Amplitude (volts)	$\geq +1.2$	-8 to +3.5 (at no load)
Rise Rate (volts/sec)	$\geq 8 \times 10^6$	$\geq 2.5 \times 10^8$
Decay Rate (volts/sec)		$\geq 5 \times 10^7$
Pulse width (50% amplitude) (μ sec)		$\geq 0.4^*$
Current (ma)	3.0 ma	14 ma max.

AND GATE		
Model ES/40-106	"REST" Condition	"AND" Condition
Inputs (6 available)	-9 volts	-0.3 volts or unused (minimum duration 0.5 μ sec)
Output	-9 volts	-0.3 volts (minimum duration 0.8 μ sec)
		(Rise rate 0.1 μ sec or input rise rate, whichever is longer)

*Note: Pulse width may be adjusted by adding external capacitance.

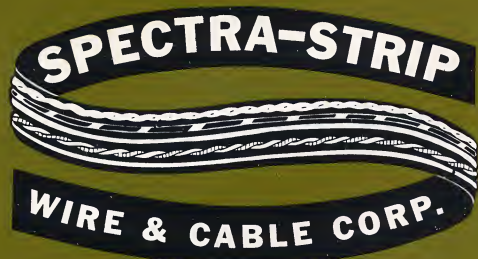
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DESIGNED FOR:

BREADBOARD TESTING

PRODUCTION

SYSTEMS APPLICATIONS

LABORATORY AND

FIELD TEST APPLICATIONS

low cost modular power supply

**COVERS THE ENTIRE
RANGE 5-30 VDC IN ONE
COMPACT UNIT**

VERSATILITY

One unit covers range of 5-30 VDC;
remote or internal adjustment of voltage.
300 ma or 500 ma units available.

PLUG-IN SIMPLICITY

A simple modular unit to supply voltage
for transistorized circuitry.

AVAILABILITY

Delivery from stock. Modules rack
mounted. Bench Cabinets.

See reverse side for specifications and prices

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UNIT TYPE	SPECIFICATIONS	MODEL	OUTPUT VOLTS	SIZE
PLUG-IN POWER PACK MODULE	Input: 105-130 VAC, 50-400 CPS Line-Load Regulation: 0.25 % or less. Ripple: Less than 2 millivolts RMS. Output Current: 300 MA at any voltage.	PS - 1000	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	3.28" x 3.50" x 4.75"
PLUG-IN POWER PACK MODULE	Input: 105-130 VAC, 50-400 CPS Line-Load Regulation: 0.25 % or less. Ripple: Less than 2 millivolts RMS Output Current: 500 MA at any voltage.	PS - 1001	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	3.28" x 3.50" x 5.50"
RACK MOUNT OR CABINET UNIT	4 (four) PS - 1000 Modules Rack mounted with edgewise panel meters selectable to monitor out- put voltage and current of each module. Voltage outputs available at front and/or rear. Voltage se- lection made by wiring change at module plug.	PS - 1002	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	19" Rack 5 1/4" High x 10" Deep (Approx.)
RACK MOUNT OR CABINET UNIT	4 (four) PS - 1001 Modules Rack mounted with edgewise panel meters selectable to monitor out- put voltage and current of each module. Voltage output available at front and/or rear. Voltage se- lection made by wiring change at module plug.	PS - 1003	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	19" Rack 5 1/4" High x 10" Deep (Approx.)
RACK MOUNT OR CABINET UNIT	4 (four) PS - 1000 Modules Rack mounted with edgewise panel meters selectable to monitor out- put voltage and current of each module. Voltage output available at front and/or rear. All voltage ranges of each module selectable from front panel.	PS - 1004	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	19" Rack 5 1/4" High x 10" Deep (Approx.)
RACK MOUNT OR CABINET UNIT	4 (four) PS - 1001 Modules Rack mounted with edgewise panel meters selectable to monitor out- put voltage and current of each module. Voltage output available at front and/or rear. All voltage ranges of each module selectable from front panel.	PS - 1005	5 - 30 VDC Ranges tap selected, vernier Adjustment between tap selections	19" Rack 5 1/4" High x 10" Deep (Approx.)

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